Teacher's Scoring Guide

ISTEP+

Grade 10

**Mathematics
Applied Skills Assessment**

Fall 2006

Indiana Statewide Testing for Educational Progress

48881-W

**CTB
McGraw-Hill**

INTRODUCTION

During the fall of 2006, Indiana students in Grades 3 through 10 participated in the administration of *ISTEP+*. The test administered in Grade 10 is the Graduation Qualifying Exam (GQE). This test is also given to other students attempting to qualify for graduation. The GQE Mathematics assessment for *ISTEP+* Fall 2006 consisted of two parts: (1) a multiple-choice section and (2) an applied skills section. For the fall testing, the multiple-choice section, which consisted of multiple-choice and gridded-response questions, was machine-scored. The applied skills section, which consisted of open-ended questions, was hand-scored.

The results of both the multiple-choice section and the applied skills section were returned to the schools in early December 2006. Copies of student responses in the applied skills section were also returned to the schools in early December 2006. It is the expectation of the Indiana Department of Education that schools will take this opportunity to invite students and parents to sit down with teachers to discuss the results. To support this endeavor, the Indiana Department of Education has prepared the following *Teacher's Scoring Guide.* The purpose of this guide is to help teachers

- understand the methods used to score the *ISTEP+* Fall 2006 Applied Skills Assessment, and
- discuss and interpret these results with students and parents.

In order to use this guide effectively, you will also need the Student Report and a copy of the student's work.

For the GQE, there are two scoring guides: English/Language Arts and Mathematics. In this Mathematics guide, you will find

- an introduction,
- a list of the Mathematics Grade 8 and the Algebra I Indiana Academic Standards,*
- rubrics (scoring rules) used to score the open-ended questions,
- anchor papers that are actual examples of student work (transcribed in this guide for clarity and ease of reading), and
- descriptions of the ways in which the response meets the rubric criteria for each of the score points.

When you review the contents of the scoring guide, keep in mind that this guide is an overview. If you have questions, write via e-mail (istep@doe.state.in.us) or call the Indiana Department of Education at (317) 232-9050.

* The Mathematics standards assessed in the GQE are a combination of the *ISTEP+* Grade 8 Mathematics and the Algebra I Standards that were adopted in September 2000.

INTRODUCTION TO THE MATHEMATICS
APPLIED SKILLS ASSESSMENT

The Applied Skills Assessment that students took this past fall in the GQE allowed the students to demonstrate their understanding of Mathematics in a variety of ways, such as using a ruler, explaining a solution, drawing a picture, or interpreting a table or graph.

STRUCTURE

The open-ended questions for the GQE Mathematics assessment were divided into two tests, Test 1 and Test 2. Each test consisted of eight open-ended questions. Students were permitted to use calculators on Test 2 but **not** on Test 1.

SCORING

Each open-ended question was scored according to its own rubric. A rubric is a description of student performance that clearly articulates the requirements for each of the score points. Scoring rubrics are essential because they ensure that all papers are scored objectively. Each rubric for the Mathematics portion of this administration of the *ISTEP+* Fall 2006 GQE assessment has a maximum possible score of two or three score points.

NOTE: Images of the questions and student work have been reduced to fit the format of this guide.

Rubrics are established prior to testing to describe the performance criteria for each score point. The performance criteria determine the number of score points possible for each question. This process ensures that all responses are judged objectively.

1. Students should not be penalized for omitting

   - degree symbols

   - dollar signs ($) or cent signs (¢)

   - zeros for place holders; for example, either 0.75 or .750 could be used

   - labels for word problems; for example, *miles*

     NOTE: Students WILL be penalized for use of incorrect labels.

2. Students should not be penalized for

   - spelling or grammar errors

   - using abbreviations; for example, *ft* or *feet* would be acceptable

3. Students should be given credit for

   - entries in the workspace that indicate understanding of a complete process even if the response on the answer line is incorrect (i.e., the student would receive partial credit for questions with rubrics that allow for scoring the work).

   - answers not written on the answer line; for example, an answer could be given in the workspace or in the explanation (however, in some cases, because of the multiple calculations in the workspace, placement of an answer on the answer line is necessary to determine which result the student intended). Students WILL be penalized for incorrect answers written on the answer line even if the correct answer appears in the workspace.

CONDITION CODES

If a response is unscorable, it is assigned one of the following condition codes:

A Blank/No response/Refusal
B Illegible
C Written predominantly in a language other than English
D Insufficient response/Copied from text

MATHEMATICS GRADE 8
INDIANA ACADEMIC STANDARDS

❏ **Number Sense**
Students know the properties of rational and irrational numbers expressed in a variety of forms. They understand and use exponents, powers, and roots.

❏ **Computation**
Students compute with rational numbers expressed in a variety of forms. They solve problems involving ratios, proportions, and percentages.

❏ **Algebra and Functions**
See the Algebra I Standards on the next page.

❏ **Geometry**
Students deepen their understanding of plane and solid geometric shapes and properties by constructing shapes that meet given conditions, by identifying attributes of shapes, and by applying geometric concepts to solve problems.

❏ **Measurement**
Students convert between units of measure and use rates and scale factors to solve problems. They compute the perimeter, area, and volume of geometric objects. They investigate how perimeter, area, and volume are affected by changes of scale.

❏ **Data Analysis and Probability**
Students collect, organize, represent, and interpret relationships in data sets that have one or more variables. They determine probabilities and use them to make predictions about events.

❏ **Problem Solving**
Students make decisions about how to approach problems and communicate their ideas. Students use strategies, skills, and concepts in finding and communicating solutions to problems. Students determine when a solution is complete and reasonable, and move beyond a particular problem by generalizing to other situations.

ALGEBRA I
INDIANA ACADEMIC STANDARDS

❑ **Operations with Real Numbers**
Students simplify and compare expressions. They use rational exponents and simplify square roots.

❑ **Linear Equations and Inequalities**
Students solve linear equations and inequalities in one variable. They solve word problems that involve linear equations, inequalities, or formulas.

❑ **Relations and Functions**
Students sketch and interpret graphs representing given situations. They understand the concept of a function and analyze the graphs of functions.

❑ **Graphing Linear Equations and Inequalities**
Students graph linear equations and inequalities in two variables. They write equations of lines and find and use the slope and y-intercept of lines. They use linear equations to model real data.

❑ **Pairs of Linear Equations and Inequalities**
Students solve pairs of linear equations using graphs and using algebra. They solve pairs of linear inequalities using graphs. They solve word problems involving pairs of linear equations.

❑ **Polynomials**
Students add, subtract, multiply, and divide polynomials. They factor quadratics.

❑ **Algebraic Fractions**
Students simplify algebraic ratios and solve algebraic proportions.

❑ **Quadratic, Cubic, and Radical Equations**
Students graph and solve quadratic and radical equations. They graph cubic equations.

❑ **Mathematical Reasoning and Problem Solving**
Students use a variety of strategies to solve problems. Students develop and evaluate mathematical arguments and proofs.

Problem Solving is identified as a Process Skill in the Indiana Academic Standards. To ensure that the *ISTEP+* questions that assess this Process Skill are grade-appropriate and that the questions use skills that are contained in the standards, these questions are developed by including at least two different indicators from Content Skills in addition to the indicator from the Process Skill. Some of the Content Standards included in the Content Skills are Computation, Geometry, and Algebra. The additional indicators may be from the same or different Content Skills.

NOTE: For the Process Skill questions, score points are awarded **only** for the Process Skill, not for the Content Skill associated with the question.

The Content Skills used for each of the Process Skill questions in the GQE Applied Skills Assessment are shown in the following chart.

PROCESS SKILL QUESTIONS

Question	Process Skills (score points awarded)	Content Skills (score points **not** awarded) *Item may map to more than one indicator in a standard.*
Test 1		
4	Problem Solving	Algebra and Functions, Geometry
6	Problem Solving	Algebra and Functions, Measurement
Test 2		
3	Problem Solving	Computation, Data Analysis and Probability
4	Problem Solving	Geometry, Measurement
7	Problem Solving	Measurement, Measurement

1 Solve the pair of equations shown below.

$$3x + 3y = 6$$
$$5x + y = 10$$

Show All Work

Answer $x =$ _____ , $y =$ _____

Exemplary Response:

- $x = 2, y = 0$

Sample Process:

- $$y = {}^-5x + 10$$
$$3x + 3({}^-5x + 10) = 6$$
$$3x - 15x + 30 = 6$$
$$^-12x = {}^-24$$
$$x = 2$$

AND

- $$3(2) + 3y = 6$$
$$6 + 3y = 6$$
$$3y = 0$$
$$y = 0$$

OR

- Other valid process

Rubric:

2 points Exemplary response

1 point Correct complete process; error in computation

0 points Other

**Test 1—Question 1
Score Point 2**

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 2 and 0. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 2

1 Solve the pair of equations shown below.

$$3x + 3y = 6$$
$$5x + y = 10$$

Show All Work

$3x + 3y = 6 \xrightarrow{m5} 15x + 15y = 30$

$5x + y = 10 \xrightarrow{m\text{-}3} + \underline{-15x - 3y = -30}$

$$\frac{12y}{12y} = \frac{0}{12}$$

$$y = 0$$

$$3x + 3y = 6$$
$$m\text{-}3 \quad + \underline{-15x + 3y = -30}$$
$$\frac{-12x}{-12x} = \frac{-24}{-12}$$
$$x = 2$$

Answer $x =$ _____ 2 _____, $y =$ _____ 0 _____

**Test 1—Question 1
Score Point 1**

This response shows a correct complete process, but a computational error is made when the student calculates 6 plus ⁻30 and gets ⁻36. This error results in an incorrect answer of 3 and ⁻5. Therefore, this response receives a Score Point 1.

SCORE POINT 1

1 Solve the pair of equations shown below.

$$3x + 3y = 6$$
$$5x + y = 10$$

Show All Work

$3x + 3y = 6$

$5x + y = 10$

$y = -5x + 10$

$3x + 3(-5x + 10)$

$3x - 15x + 30 = 6$

$-12x + 30 = 6$

$\quad\quad -30 \;\; -30$

$-12x \quad = -36 \quad\quad x = 3$

$y = -5 (3) + 10$

$-15 + 10 = -5$

Answer $x =$ _____ 3 _____, $y =$ _____ -5 _____

SCORE POINT 0

1 Solve the pair of equations shown below.

$$3x + 3y = 6$$
$$5x + y = 10$$

Show All Work

$$3y = -3x + 6$$
$$y = -5x + 10$$

$$3x + 3(-5x + 10) = 6$$
$$3x - 15x + 10 = 6$$
$$-12x = -4$$
$$x = \frac{1}{3}$$

$$y = -5\left(\frac{1}{3}\right) + 10 \qquad \frac{-5}{1} \cdot \frac{1}{3}$$
$$y = \frac{-5}{3} + 10$$
$$y = -1\frac{1}{3} + 10$$
$$y = 9\frac{2}{3}$$

Answer $x =$ ___ $\frac{1}{3}$ ___ , $y =$ ___ $9\frac{2}{3}$ ___

This response shows an incorrect process resulting in an incorrect answer. The student does not distribute correctly in going from the step $3x + 3(^-5x + 10) = 6$ to the next step. The student multiplies 3 and ^-5x correctly, but does not multiply 3 and 10. Therefore, this response receives a Score Point 0.

2 Marcy spent $100 on Saturday. She spent the money on clothes, dinner, and a $12 gift for her mother. She spent three times as much on clothes as she did on dinner.

On the line below, write an equation in one variable that can be used to determine how much money, d, Marcy spent on dinner.

Equation _____

Now solve the equation you wrote to determine how much Marcy spent on dinner.

Answer $ _____

Exemplary Response:

- $4d + 12 = 100$

OR

- $d + 3d + 12 = 100$

OR

- Other valid equation

AND

- $22

Rubric:

2 points	Exemplary response
1 point	One correct component
	OR
	Correct answer based on incorrect equation
0 points	Other

SCORE POINT 2

2 Marcy spent $100 on Saturday. She spent the money on clothes, dinner, and a $12 gift for her mother. She spent three times as much on clothes as she did on dinner.

On the line below, write an equation in one variable that can be used to determine how much money, d, Marcy spent on dinner.

Equation ___ d + 3d + 12 = 100 ___

Now solve the equation you wrote to determine how much Marcy spent on dinner.

Answer $ ___ 22.00 ___

$$d + 3d + 12 = 100$$
$$ {}^{-12} {}^{-12}$$
$$\frac{4d}{4} = \frac{88}{4}$$
$$d = 22$$

$$\begin{array}{r} {}^{0\,9} \\ \cancel{1}\cancel{0}6 \\ -\ 12 \\ \hline 88 \end{array}$$

This response matches the exemplary response contained in the rubric. The student shows a correct equation and a correct answer of $22. The response receives a Score Point 2.

**Test 1—Question 2
Score Point 1**

This response shows an incorrect equation for the given situation. However, the student correctly solves the incorrect equation. Therefore, this response receives a Score Point 1.

SCORE POINT 1

2 Marcy spent $100 on Saturday. She spent the money on clothes, dinner, and a $12 gift for her mother. She spent three times as much on clothes as she did on dinner.

On the line below, write an equation in one variable that can be used to determine how much money, d, Marcy spent on dinner.

Equation _____ 100 = 3d + 12 _____

Now solve the equation you wrote to determine how much Marcy spent on dinner.

Answer $ _____ 29.33 _____

$$\begin{array}{r} 29.33 \\ 3\overline{)88} \\ 6 \\ 28 \\ 27 \\ \overline{10} \end{array}$$

$$\begin{array}{r} ^1 \\ 26 \\ \times \ 3 \\ \hline 78 \end{array}$$

100 = 3d + 12
88 = 3d
d =

**Test 1—Question 2
Score Point 0**

This response shows an expression instead of an equation and an incorrect answer of $26.40. Therefore, this response receives a Score Point 0.

SCORE POINT 0

2 Marcy spent $100 on Saturday. She spent the money on clothes, dinner, and a $12 gift for her mother. She spent three times as much on clothes as she did on dinner.

On the line below, write an equation in one variable that can be used to determine how much money, d, Marcy spent on dinner.

Equation _____ 100 − 12 · 3 _____

Now solve the equation you wrote to determine how much Marcy spent on dinner.

Answer $ _____ 26.4 _____

3 What is an equation of the line shown on the coordinate plane below?
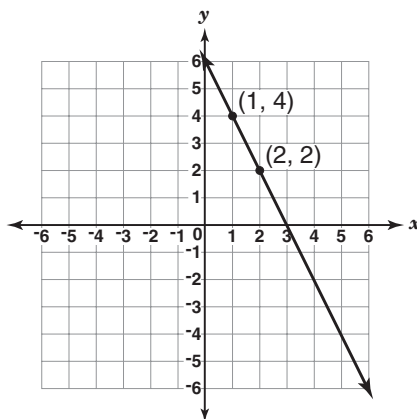
Show All Work

Equation _____

Exemplary Response:

- $y = {}^-2x + 6$

OR

- Other valid equation

Sample Process:

- $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

  $= \dfrac{4 - 2}{1 - 2}$

  $= {}^-2$

  Look at graph to determine y-intercept of 6

  $y = {}^-2x + 6$

OR

- Other valid process

Rubric:

2 points   Exemplary response
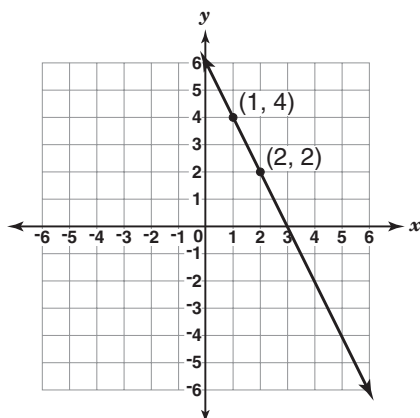
1 point   Correct complete process; error in computation

OR

Equation with either correct slope or correct y-intercept

0 points   Other

SCORE POINT 2

3 What is an equation of the line shown on the coordinate plane below?

(1, 4)

(2, 2)

Show All Work

$y = -2x + 6$

$(1,4) \ (2,2)$

$$\frac{2 - 4}{2 - 1} = \frac{-2}{1} = m = -2$$

y-int $= 6 = b$

Equation _____ $y = -2x + 6$ _____

Test 1—Question 3 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows a correct equation. A correct complete process is shown, but not required. The response receives a Score Point 2.

This response shows an incorrect equation for the given line, but a correct *y*-intercept of 6. Therefore, this response receives a Score Point 1.

SCORE POINT 1

3 What is an equation of the line shown on the coordinate plane below?

(1, 4)

(2, 2)
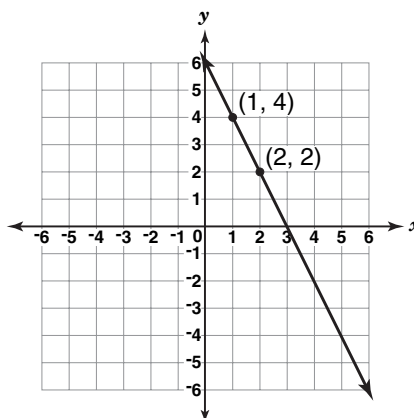
Show All Work

$m = {}^2/_1$ $\qquad$ $y = mx + b$

$b = 6$

Equation _____ $y = 2x + 6$ _____

SCORE POINT 0

3 What is an equation of the line shown on the coordinate plane below?

(1, 4)

(2, 2)

Show All Work

(2, 2)
(1, 4)

$$\frac{\times 1}{2} \quad , \quad \frac{\times 4}{8}$$

2   2

Equation _____ $2x + 8y = \frac{1}{2}$ _____

This response shows an incorrect equation. The student does not show a correct slope, a correct y-intercept, or a correct complete process. Therefore, this response receives a Score Point 0.

4 Jeri was given the diagram below of triangle ABC as part of a math project.
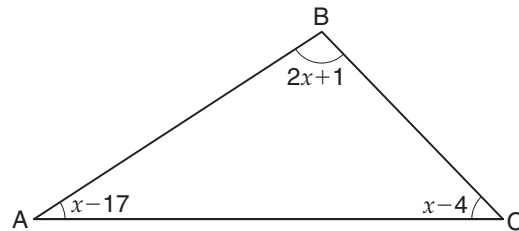
On the line below, write an equation that can be used to determine the value of x.

Equation _____

What is the measure, in degrees, of each of the angles? Write your answers on the lines below.

Show All Work

Angle A = _____ °

Angle B = _____ °

Angle C = _____ °

Exemplary Response:

- $4x - 20 = 180$

OR

- $(2x + 1) + (x - 17) + (x - 4) = 180$

OR

- Other valid equation

AND

- Angle A $= 33°$, Angle B $= 101°$, Angle C $= 46°$

AND

- Correct complete process

Sample Process:

- $(2x + 1) + (x - 17) + (x - 4) = 180$

$$4x - 20 = 180$$
$$4x = 200$$
$$x = 50$$

$m\angle A = x - 17 = 50 - 17 = 33°$

$m\angle B = 2x + 1 = 2(50) + 1 = 101°$

$m\angle C = x - 4 = 50 - 4 = 46°$

OR

- Other valid process

NOTE: Award credit for a correct complete process with an error in computation.

Award a maximum of 1 point for a completely incorrect equation solved correctly, and then applied correctly to all 3 angles.

Award a maximum of 2 points for an equation showing the sum of the 3 angles set equal to a value other than 180, then solved correctly, and finally applied correctly to all 3 angles.

Correct complete process is defined as solving the equation for x and then applying that value of x to at least 1 angle.

Rubric:

3 points   Exemplary response

2 points   Two correct components

1 point   One correct component

0 points   Other

This response matches the exemplary response contained in the rubric. The student shows a correct equation and correct answers of 33°, 101°, and 46°. A correct complete process for finding the angles is shown. The response receives a Score Point 3.

SCORE POINT 3

4 Jeri was given the diagram below of triangle ABC as part of a math project.
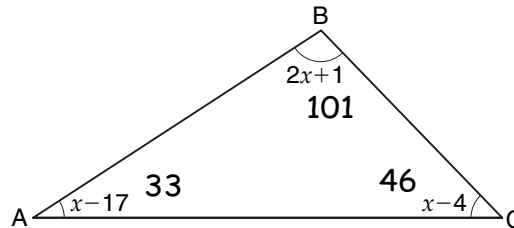
On the line below, write an equation that can be used to determine the value of x.

Equation $2x + 1 + x - 17 + x - 4 = 180$

What is the measure, in degrees, of each of the angles? Write your answers on the lines below.

Show All Work

$$4x - 20 = 180$$
$$4x = 200$$
$$x = 50$$

Angle A = _____33_____ °

Angle B = _____101_____ °

Angle C = _____46_____ °

SCORE POINT 2

4 Jeri was given the diagram below of triangle ABC as part of a math project.
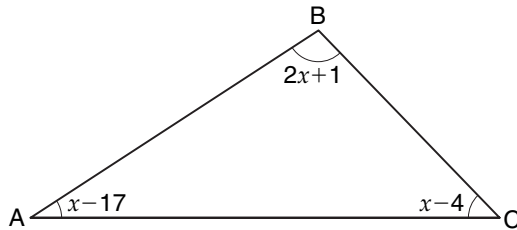
On the line below, write an equation that can be used to determine the value of x.

Equation _____ 4x − 20 = 180 _____

What is the measure, in degrees, of each of the angles? Write your answers on the lines below.

Show All Work

```
4x - 20 = 180          40    80    40
    4x = 160          -17   + 1   - 4
      x = 40           23    81    36
```

Angle A = _____ 23 _____ °

Angle B = _____ 81 _____ °

Angle C = _____ 36 _____ °

This response shows a correct equation, but a computational error results in incorrect answers for the three angles. The computational error occurs when the student adds 20 and 180 and gets 160 instead of 200. However, the student correctly applies the incorrect value of *x* to all three angles. Therefore, this response receives a Score Point 2.

This response shows a correct equation, but an incorrect process results in incorrect answers for the three angles. The student uses a different equation to incorrectly solve for each angle. Therefore, this response receives a Score Point 1.

SCORE POINT 1

4 Jeri was given the diagram below of triangle ABC as part of a math project.

B
$2x+1$
$x-17$ A $x-4$ C
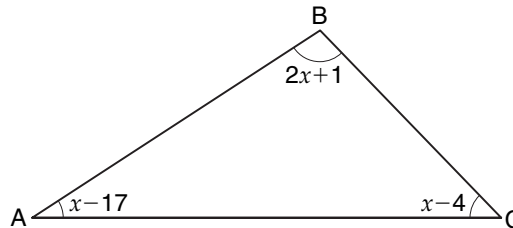
On the line below, write an equation that can be used to determine the value of x.

Equation $x - 17 + 2x + 1 + x - 4 = 180°$

What is the measure, in degrees, of each of the angles? Write your answers on the lines below.

Show All Work

$$2x + 1 = 180$$
$$-1 \qquad -1$$

$$x - 17 = 180 \qquad x - 4 = 180 \qquad \frac{2x}{2} = \frac{179}{2}$$
$$+ 17 \quad +17 \qquad +4 \quad +4$$
$$x = 197 \qquad x = 184 \qquad x = 89.1$$

$$\begin{array}{r} 89.1 \\ 2\overline{)179} \\ -16 \\ \hline 19 \\ 18 \\ \hline 1 \end{array}$$

Angle A = _____197_____ °

Angle B = _____89_____ °

Angle C = _____184_____ °

4 Jeri was given the diagram below of triangle ABC as part of a math project.
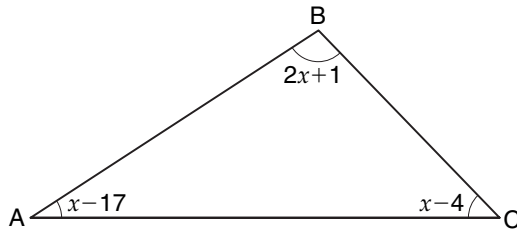
On the line below, write an equation that can be used to determine the value of x.

Equation _____ y = mx + b _____

What is the measure, in degrees, of each of the angles? Write your answers on the lines below.

Show All Work

$$y = x - 17$$

$$y = 2x + 1$$

$$y = x - 4$$

Angle A = _____ 18 _____ °

Angle B = _____ 30 _____ °

Angle C = _____ 4 _____ °

5 Solve: $\dfrac{5x + 2}{6x - 3} = \dfrac{2}{3}$

Show All Work

Answer $x = $ _____

Exemplary Response:

- $x = {}^-4$

Sample Process:

- $\dfrac{5x + 2}{6x - 3} = \dfrac{2}{3}$

$15x + 6 = 12x - 6$

$3x = {}^-12$

$x = {}^-4$

OR

- Other valid process

Rubric:

2 points Exemplary response

1 point Correct complete process; error in computation

0 points Other

SCORE POINT 2

5 Solve: $\dfrac{5x + 2}{6x - 3} = \dfrac{2}{3}$

Show All Work

$$\dfrac{5x + 2}{6x - 3} = \dfrac{2}{3}$$

$$15x + 6 = 12x - 6$$

$$3x = -12$$

$$x = -4$$

Answer $x = $ _____ -4 _____

Test 1—Question 5
Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of ⁻4. A correct complete process is shown, but is not required. The response receives a Score Point 2.

SCORE POINT 1

5 Solve: $\dfrac{5x + 2}{6x - 3} = \dfrac{2}{3}$

Show All Work

$$\dfrac{5x + 2}{6x - 3} = \dfrac{2}{3}$$

$$2(6x - 3) = 3(5x + 2)$$

$$12x - 6 = 15x + 6$$

$$\underline{-12x \qquad - 12x}$$

$$-6 = 3x + 6$$

$$\underline{-6 \qquad -6}$$

$$\dfrac{-12}{3} = \dfrac{3x}{3} \quad x = -6$$

Answer $x = $ _____ -6 _____

Test 1—Question 5
Score Point 1

This response shows a correct complete process. However, a computational error is made when the student divides ⁻12 by 3. Therefore, the response receives a Score Point 1.

SCORE POINT 0

5 Solve: $\dfrac{5x + 2}{6x - 3} = \dfrac{2}{3}$

Show All Work

$$5x + 2 = 2 \qquad 6x - 3 = 3$$

$$5x = 0 \qquad 6x = 6$$

$$x = 0 \qquad x = 1$$

Answer $x = $ _____ 0, 1 _____

Test 1—Question 5
Score Point 0

This response shows an incorrect process resulting in an incorrect answer. The student gets two incorrect answers by creating and solving two equations. Therefore, this response receives a Score Point 0.

6 A thin piece of wire 37.2 centimeters long is bent into the shape of a rectangle. The length of the rectangle is twice the width of the rectangle.

What are the length and width, in centimeters, of the rectangle?

Show All Work

Length _____ centimeters, **Width** _____ centimeters

Exemplary Response:

• Length 12.4 centimeters, Width 6.2 centimeters

AND

• Correct complete process

Sample Process:

• $2L + 2W = 37.2$

$$L = 2W$$

$$2(2W) + 2W = 37.2$$

$$6W = 37.2$$

$$W = 6.2$$

$L = 2W$

$L = 12.4$

OR

• Other valid process

NOTE: Award 1 point if the length and the width are switched.

Rubric:

2 points Exemplary response

1 point Correct answer only

OR

Correct complete process; error in computation

0 points Other

SCORE POINT 2

6 A thin piece of wire 37.2 centimeters long is bent into the shape of a rectangle. The length of the rectangle is twice the width of the rectangle.

What are the length and width, in centimeters, of the rectangle?

Show All Work

2w

w [   ] w

2w
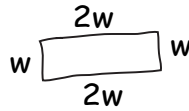
$w + w + 2w + 2w = 37.2$

$6w = 37.2$

$w = 6.2$

$$\begin{array}{r} 6.2 \\ 6\overline{)37.2} \\ \underline{36} \\ 1.2 \end{array}$$

$$\begin{array}{r} 6.2 \\ \times\ 2 \\ \hline 12.4 \end{array}$$

Length __12.4__ centimeters, **Width** __6.2__ centimeters

This response matches the exemplary response contained in the rubric. The student correctly determines the length, 12.4 centimeters, and the width, 6.2 centimeters. A correct complete process is shown. The response receives a Score Point 2.

SCORE POINT 1

6 A thin piece of wire 37.2 centimeters long is bent into the shape of a rectangle. The length of the rectangle is twice the width of the rectangle.

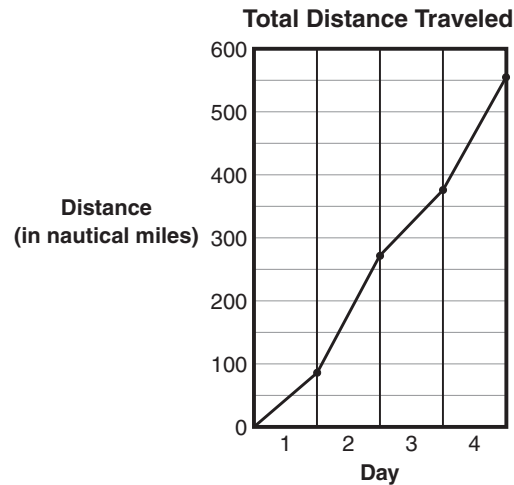What are the length and width, in centimeters, of the rectangle?

Show All Work

12.4

6.2

Length __12.4__ centimeters, **Width** __6.2__ centimeters

**Test 1—Question 6
Score Point 1**

This response shows the correct answers for the length and the width. However, there is no process shown. Therefore, this response receives a Score Point 1.

This response shows incorrect answers for the length and width and an incorrect process. The student divides the length of the wire by 2 to find an incorrect length of the rectangle. The student then doubles that value to find an incorrect width. Therefore, this response receives a Score Point 0.

SCORE POINT 0

6 A thin piece of wire 37.2 centimeters long is bent into the shape of a rectangle. The length of the rectangle is twice the width of the rectangle.

What are the length and width, in centimeters, of the rectangle?

Show All Work

length 37.2

$$\begin{array}{r} 18.6 \\ 2\overline{)37.2} \\ \underline{2} \\ 17 \\ \underline{16} \\ 12 \end{array}$$

$$\begin{array}{r} 18.6 \\ \times\quad 2 \\ \hline 37.2 \end{array}$$

Length _____18.6_____ centimeters, **Width** _____37.2_____ centimeters

---

7 The Sanders family took a 4-day Hawaiian cruise. Ms. Sanders recorded the nautical miles the ship traveled each day, as shown on the graph below.

Total Distance Traveled

Distance (in nautical miles)

Day

On one of the days, the family traveled a total of 105 nautical miles from Kahului, Maui to Hilo, Hawaii. Which day did the Sanders family sail from Kahului to Hilo?

Answer _____

On the lines below, explain on which day the Sanders family traveled the LEAST distance. Be sure to use values from the graph to justify your explanation.

_____

_____

_____

_____

Exemplary Response:

- 3

AND

Explanation equivalent to the following:

- They traveled the least distance on the first day because they traveled less than 100 miles. Days 2, 3, and 4 were all greater than 100 miles.
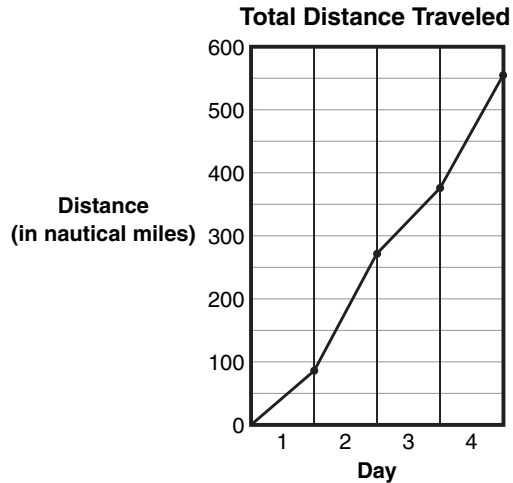
OR

- Other valid explanation

Rubric:

2 points   Exemplary response

1 point   One correct component

0 points   Other

SCORE POINT 2

7 The Sanders family took a 4-day Hawaiian cruise. Ms. Sanders recorded the nautical miles the ship traveled each day, as shown on the graph below.

Total Distance Traveled

On one of the days, the family traveled a total of 105 nautical miles from Kahului, Maui to Hilo, Hawaii. Which day did the Sanders family sail from Kahului to Hilo?
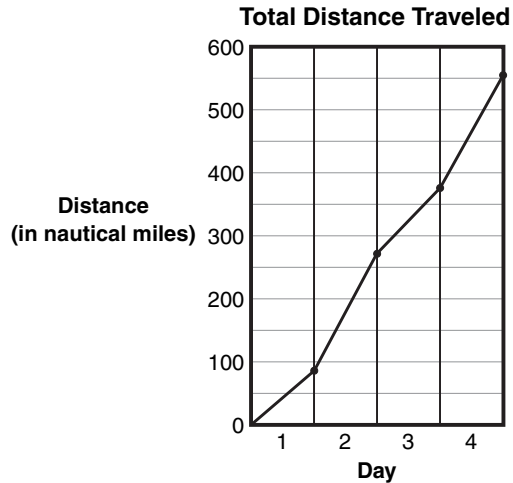
Answer ____day 3____

On the lines below, explain on which day the Sanders family traveled the LEAST distance. Be sure to use values from the graph to justify your explanation.

Day 1 because if you look at the distance from day one, they don't even travel 100 nautical miles. The rest of the days they travel over 100 nautical miles.

Test 1—Question 7 Score Point 2

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 3 and gives a valid explanation. The response receives a Score Point 2.

This response shows the correct answer. However, the student gives an incomplete explanation for why the Sanders family traveled the least on Day 1. The student does not compare the distance traveled on Day 1 with the other days. Therefore, this response receives a Score Point 1.

SCORE POINT 1

7 The Sanders family took a 4-day Hawaiian cruise. Ms. Sanders recorded the nautical miles the ship traveled each day, as shown on the graph below.

Total Distance Traveled
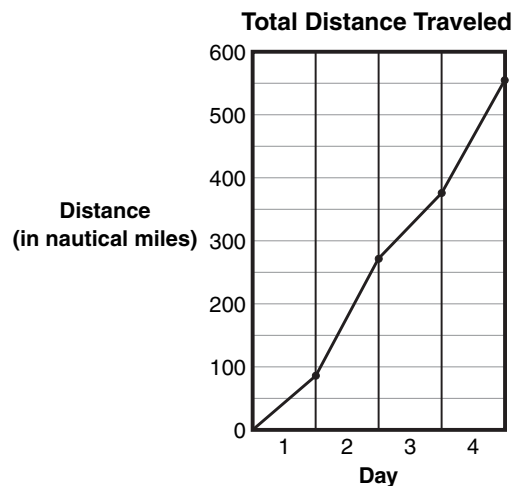
On one of the days, the family traveled a total of 105 nautical miles from Kahului, Maui to Hilo, Hawaii. Which day did the Sanders family sail from Kahului to Hilo?

Answer _____Day 3_____

On the lines below, explain on which day the Sanders family traveled the LEAST distance. Be sure to use values from the graph to justify your explanation.

The Sanders family traveled the least on day one. They only traveled about one hundred nautical miles.

SCORE POINT 0

7 The Sanders family took a 4-day Hawaiian cruise. Ms. Sanders recorded the nautical miles the ship traveled each day, as shown on the graph below.

Total Distance Traveled

On one of the days, the family traveled a total of 105 nautical miles from Kahului, Maui to Hilo, Hawaii. Which day did the Sanders family sail from Kahului to Hilo?

Answer _604 miles_

On the lines below, explain on which day the Sanders family traveled the LEAST distance. Be sure to use values from the graph to justify your explanation.

The way you get the answer is by adding.

Test 1—Question 7
Score Point 0

This response shows an incorrect answer and an incorrect explanation. Therefore, this response receives a Score Point 0.

8 Read the statement below.

> For all rational numbers, the equation $y = x^2$ produces negative values for y.

On the line below, write a value of x that makes the statement TRUE. Write "not possible" if there are no values of x that make the statement true.

Answer _____

On the line below, write a value of x that makes the statement FALSE. Write "not possible" if there are no values of x that make the statement false.

Answer _____

Is the statement true for all values of x, some values of x, or no values of x?

Answer _____

Exemplary Response:

- True: Not possible

AND

- False: Any rational number

AND

- No values of *x*

Rubric:

2 points Exemplary response

1 point Two correct components

0 points Other

SCORE POINT 2

8 Read the statement below.

For all rational numbers, the equation $y = x^2$ produces negative values for y.

On the line below, write a value of x that makes the statement TRUE. Write "not possible" if there are no values of x that make the statement true.

Answer _____ Not Possible _____

On the line below, write a value of x that makes the statement FALSE. Write "not possible" if there are no values of x that make the statement false.

Answer _____ -2 _____

Is the statement true for all values of x, some values of x, or no values of x?

Answer _____ no values of x _____

This response matches the exemplary response contained in the rubric. The student shows the correct answers of "not possible," "$^-$2," and "no values of x." The response receives a Score Point 2.

This response shows two correct answers. The student does not give a value of x that makes the statement false. Therefore, this response receives a Score Point 1.

SCORE POINT 1

8 Read the statement below.

> For all rational numbers, the equation $y = x^2$ produces negative values for y.

On the line below, write a value of x that makes the statement TRUE. Write "not possible" if there are no values of x that make the statement true.

Answer _____ not possible _____

On the line below, write a value of x that makes the statement FALSE. Write "not possible" if there are no values of x that make the statement false.

Answer ___ $y = x^2$ y can't equal $= x^2$ ___

Is the statement true for all values of x, some values of x, or no values of x?

Answer _____ no values of x _____

SCORE POINT 0

8 Read the statement below.

For all rational numbers, the equation $y = x^2$ produces negative values for y.

On the line below, write a value of x that makes the statement TRUE. Write "not possible" if there are no values of x that make the statement true.

Answer _____ $y = -x^2$ _____

On the line below, write a value of x that makes the statement FALSE. Write "not possible" if there are no values of x that make the statement false.

Answer _____ "not possible" _____

Is the statement true for all values of x, some values of x, or no values of x?

Answer _____ yes _____

1 A snail can travel at a rate of 0.28 centimeter per second.

How many MINUTES will the snail take to travel 7 METERS?

Show All Work

Answer _____ minutes

Exemplary Response:

• 41.7 minutes

Sample Process:

• $7m \times \dfrac{100 \text{ cm}}{1 \text{ m}} \times \dfrac{1 \text{ sec}}{0.28 \text{ cm}} \times \dfrac{1 \text{ min}}{60 \text{ sec}}$

$= 41.\overline{6} \approx 41.7$ minutes

OR

• Other valid process

Rubric:

2 points Exemplary response

1 point Correct process for determining the total number of seconds

OR

Correct process for determining the centimeters per minute and total centimeters traveled

OR

Correct process for determining $\dfrac{1}{60}$ of the total centimeters traveled

0 points Other

40

SCORE POINT 2

1 A snail can travel at a rate of 0.28 centimeter per second.

How many MINUTES will the snail take to travel 7 METERS?

Show All Work

$$\frac{.28 \text{ cm}}{1 \text{ sec}} \quad \frac{60 \text{ sec}}{1 \text{ min}} \quad \frac{16.8 \text{ cm}}{1 \text{ min}} \quad \frac{1 \text{ m}}{100 \text{ cm}}$$

$$\frac{16.8 \text{ cm}}{100 \text{ m}}$$

Answer _____41.6̄6̄_____ minutes

$$\frac{0.168 \text{ m}}{1 \text{ min}}$$

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 41.66 minutes. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 1

1 A snail can travel at a rate of 0.28 centimeter per second.

How many MINUTES will the snail take to travel 7 METERS?

Show All Work

$$.28x = 700 \qquad 7 \text{ m} \times \frac{100 \text{ cm}}{1 \text{ m}} = 700 \text{ cm}$$

$$x = 2500$$

Answer _____2500_____ minutes

This response shows a correct process for determining the total number of seconds. However, the student does not convert the seconds to minutes. Therefore, this response receives a Score Point 1.

This response
shows an incorrect
answer and an
incorrect process.
Therefore, this
response receives a
Score Point 0.

SCORE POINT 0

1 A snail can travel at a rate of 0.28 centimeter per second.

How many MINUTES will the snail take to travel 7 METERS?

Show All Work

$$60 \times 7 = 420$$

Answer _____ 420 _____ minutes

2 Look at the side view of the stairs shown below.

17 inches

x
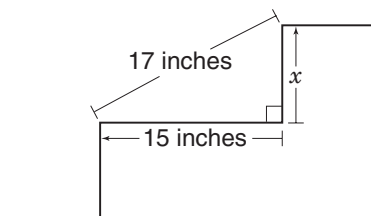
15 inches

What is the height (x), in inches, of one stair?

Show All Work

Answer _____ inches

Exemplary Response:

• 8 inches

Sample Process:

• $a^2 + b^2 = c^2$

$15^2 + b^2 = 17^2$

$225 + b^2 = 289$

$b^2 = 64$

$b = 8$

OR

• Other valid process

Rubric:

2 points Exemplary response

1 point Correct complete process; error in computation

0 points Other

This response matches the exemplary response contained in the rubric. The student shows the correct answer of 8 inches. A correct complete process is shown, but not required. The response receives a Score Point 2.

SCORE POINT 2

2 Look at the side view of the stairs shown below.
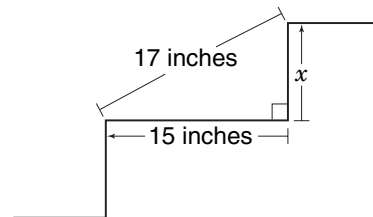
17 inches

x

15 inches

What is the height (x), in inches, of one stair?

Show All Work

$a^2 + b^2 = c^2$

$a^2 + 15^2 = 17^2$

$a^2 + 225 = 289$

$\underline{-225 \quad -225}$

$a^2 = 64$

$a = 8$

Answer _____8_____ inches

2 Look at the side view of the stairs shown below.
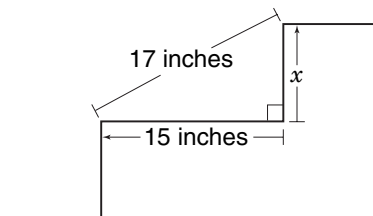
What is the height (x), in inches, of one stair?

Show All Work

$$a^2 + b^2 = c^2$$
$$a^2 + 15^2 = 17^2$$
$$a^2 + 225 = 289$$
$$\sqrt{a^2} = \sqrt{514}$$
$$a = 22.7$$

**Answer** ___22.7___ inches

**Test 2—Question 2
Score Point 1**

This response shows a correct complete process. However, an error is made in isolating a^2 that results in an incorrect answer. Therefore, this response receives a Score Point 1.

This response shows an incomplete process resulting in an incorrect answer. The student does not take the square root of 64. Therefore, this response receives a Score Point 0.

SCORE POINT 0

2 Look at the side view of the stairs shown below.
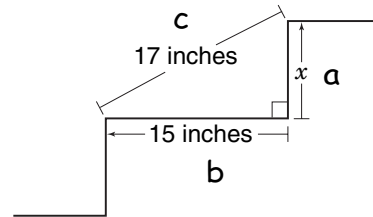
What is the height (x), in inches, of one stair?

Show All Work

$$a^2 + 15^2 = 17^2$$
$$a^2 + 225 = 289$$
$$\underline{-225 \quad -225}$$
$$64$$

Answer _____64_____ inches

3 The table below shows Paul's score for his first four bowling games.

Paul's Bowling Games

Game	Score
1	120
2	110
3	80
4	80

Paul believes he can raise his mean bowling score to 140 after bowling one more game. The highest possible score for one game is 300. On the lines below, explain why Paul is correct or incorrect. Be sure to include what his highest possible mean score could be when justifying your answer.

_____

_____

_____

_____

_____

Exemplary Response:

Explanation equivalent to the following:

- Paul is incorrect because getting the maximum score of 300 would make his mean score $\frac{690}{5} = 138$, so the highest his mean score could be is 138, not 140.

OR

- Other valid explanation

AND

- Correct maximum mean of 138

Rubric:

2 points Exemplary response

1 point Correct conclusion based on correct complete process; error in computation

OR

Valid explanation without correct maximum mean of 138

OR

Correct maximum mean only

0 points Other

This response matches the exemplary response contained in the rubric. The student shows a correct explanation for why Paul's claim is not correct. The response receives a Score Point 2.

SCORE POINT 2

3 The table below shows Paul's score for his first four bowling games.

Paul's Bowling Games

Game	Score
1	120
2	110
3	80
4	80

Paul believes he can raise his mean bowling score to 140 after bowling one more game. The highest possible score for one game is 300. On the lines below, explain why Paul is correct or incorrect. Be sure to include what his highest possible mean score could be when justifying your answer.

Incorrect. Because if you add 120 + 110 + 80 + 80 + 300 you get 690. Then if you divide that by 5. Paul would only have an average of 138.

SCORE POINT 1

3 The table below shows Paul's score for his first four bowling games.

Paul's Bowling Games

120
+110   97.5
  80
  80
─────
 390

Game	Score
1	120
2	110
3	80
4	80

Paul believes he can raise his mean bowling score to 140 after bowling one more game. The highest possible score for one game is 300. On the lines below, explain why Paul is correct or incorrect. Be sure to include what his highest possible mean score could be when justifying your answer.

His average now is only 97.5 to raise his average to 140
he would have to bowl over 300, and 300 is the highest a
person can get when bowling so he is incorrect, it's
impossible.

This response shows a correct conclusion, but the explanation is incomplete because the student does not identify the mean score Paul will get if he bowls 300. Therefore, this response receives a Score Point 1.

This response shows an incorrect explanation. The student does not correctly explain how to determine the mean score. Therefore, this response receives a Score Point 0.

SCORE POINT 0

3 The table below shows Paul's score for his first four bowling games.

Paul's Bowling Games

Game	Score
1	120
2	110
3	80
4	80

Paul believes he can raise his mean bowling score to 140 after bowling one more game. The highest possible score for one game is 300. On the lines below, explain why Paul is correct or incorrect. Be sure to include what his highest possible mean score could be when justifying your answer.

True because if you add those numbers plus 300 and divide by 5 you are pretty close to 140.

4 John is going to walk to his house and arrive there at 5:00 P.M. He will walk diagonally across a field to his house, as shown in the diagram below.
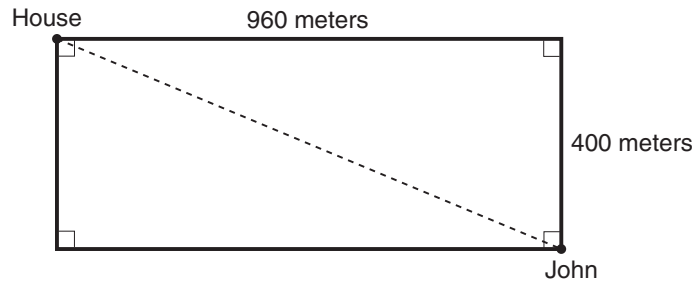
John walks at a rate of 80 meters per minute.

At what time does John have to start walking to his house so he will arrive there at 5:00 P.M.?

Show All Work

Answer _____ P.M.

Exemplary Response:

- 4:47 P.M.

AND

- Correct complete process

Sample Process:

- Length of John's path, (x):

  $x^2 = 400^2 + 960^2$

  $x^2 = 1,081,600$

  $x = 1,040$ meters

  Time to walk home:

  time $= \dfrac{1,040}{80} = 13$ minutes

  5:00 P.M. $-$ 13 minutes $=$ 4:47 P.M.

OR

- Other valid process

Rubric:

3 points Exemplary response

2 points Correct answer only

OR

Correct complete process; error in computation

1 point Correct process for determining amount of time it will take to walk

0 points Other

4 John is going to walk to his house and arrive there at 5:00 P.M. He will walk diagonally across a field to his house, as shown in the diagram below.

House   960 meters
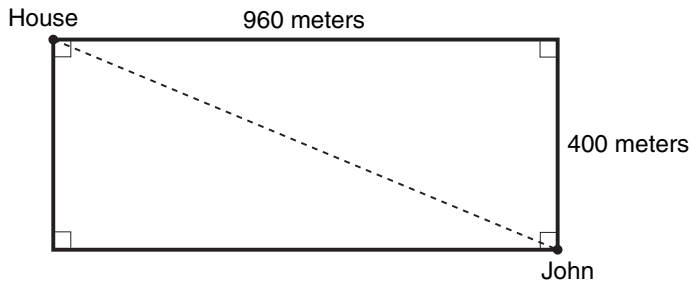
400 meters

John

John walks at a rate of 80 meters per minute.

At what time does John have to start walking to his house so he will arrive there at 5:00 P.M.?

Show All Work

$$a^2 + b^2 = c^2$$
$$400^2 + 960^2 = c^2$$
$$160{,}000 + 921{,}600 = c^2$$
$$\sqrt{1{,}081{,}600} = \sqrt{c^2}$$
$$1{,}040 \text{ meters}$$

$$t = \frac{d}{r}$$

$$t = \frac{1040 \text{ m}}{80 \text{ mpm}}$$

$$t = 13 \text{ mins}$$

4:47

Answer ___4:47___ P.M.

**Test 2—Question 4
Score Point 3**

This response matches the exemplary response contained in the rubric. The student shows a correct answer of 4:47 P.M. and a correct complete process. The response receives a Score Point 3.

This response shows a correct complete process, but a computational error is made that results in an incorrect answer. The student adds 921,600 and 160,000 incorrectly. Therefore, this response receives a Score Point 2.

SCORE POINT 2

4 John is going to walk to his house and arrive there at 5:00 P.M. He will walk diagonally across a field to his house, as shown in the diagram below.

House   960 meters
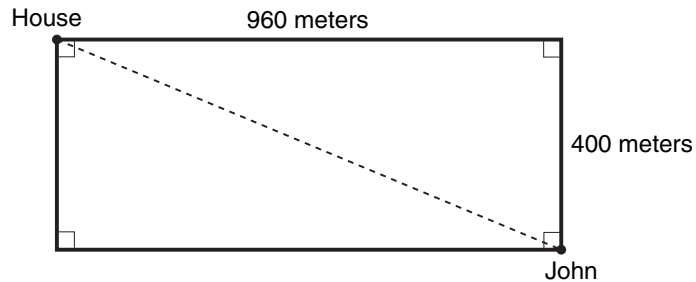
400 meters

John

John walks at a rate of 80 meters per minute.

At what time does John have to start walking to his house so he will arrive there at 5:00 P.M.?

Show All Work

$694 = 80 \cdot t$

$t = 8.675$

$960^2 + 400^2 = c^2$

$921600 + 160,000 = c^2$

$\sqrt{481,600} = c^2$

$693.97406 = c$

Answer _____ 4:51 _____ P.M.

SCORE POINT 1

4 John is going to walk to his house and arrive there at 5:00 P.M. He will walk diagonally across a field to his house, as shown in the diagram below.

House   960 meters

1040 ---------
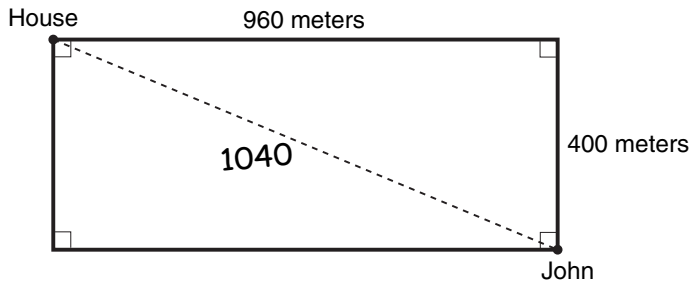
400 meters

John

John walks at a rate of 80 meters per minute.

At what time does John have to start walking to his house so he will arrive there at 5:00 P.M.?

Show All Work

$a^2 + b^2 = c^2$

$960^2 + 400^2 = c^2$

$921600 + 160000 = c^2$

$\sqrt{1081600} = \sqrt{c^2}$

$1040 = c$

$d = rt$

$\dfrac{1040}{80} = \dfrac{80t}{80}$

$13 = t$

$13 = 1$

13

-12

1

Answer _____1_____ P.M.

This response shows an incorrect answer and an incorrect process. The student finds the time it took to walk 960 meters at a rate of 80 meters per minute. Therefore, this response receives a Score Point 0.

SCORE POINT 0

4 John is going to walk to his house and arrive there at 5:00 P.M. He will walk diagonally across a field to his house, as shown in the diagram below.

House   960 meters
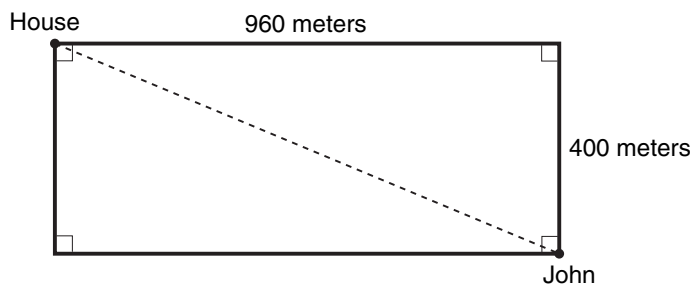
400 meters

John

John walks at a rate of 80 meters per minute.

At what time does John have to start walking to his house so he will arrive there at 5:00 P.M.?
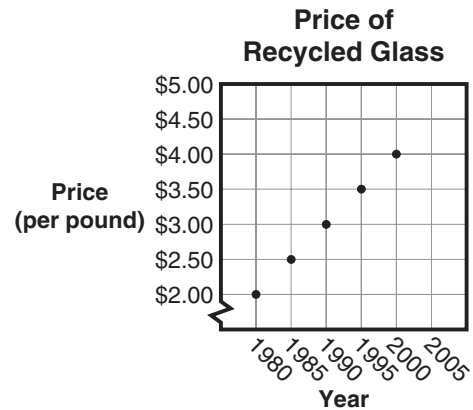
Show All Work

$$960 \div 80 = 12$$

$$\begin{array}{r} 5{:}00 \\ \underline{00{:}12} \end{array}$$

Answer _____4:48_____ P.M.

5 Look at the graph below.

**Price of
Recycled Glass**

**Price
(per pound)**

On the lines below, explain how to use the graph to estimate the price per pound of recycled glass in 1997.

_____

_____

_____

Based on the explanation above, what will be a good estimate of the price per pound of recycled glass in 1997?

Show All Work

Answer $ _____ per pound

Exemplary Response:

Explanation equivalent to the following:

• The rate at which cost for glass per pound
  has increased is 50 cents per five years, which
  is $0.10 per year. In 1995, the cost per pound
  was $3.50. Add $0.20 to get to 1997.

OR

• Other valid explanation

AND

• Answer in the range of $3.60 to $3.80 per
  pound
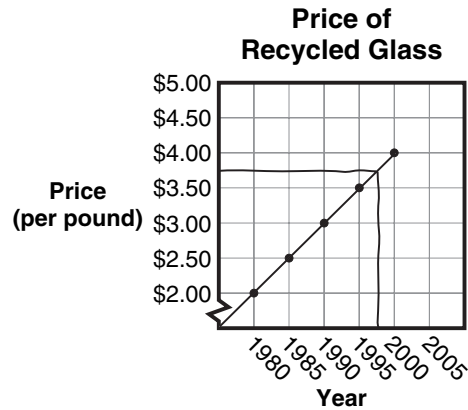
NOTE: Award credit for correct answer based on
incorrect explanation.

Rubric:

2 points Exemplary response

1 point One correct
             component

0 points Other

SCORE POINT 2

5 Look at the graph below.

**Price of
Recycled Glass**

Price
(per pound)

$5.00
$4.50
$4.00
$3.50
$3.00
$2.50
$2.00

1980 1985 1990 1995 2000 2005
Year

On the lines below, explain how to use the graph to estimate the price per pound of recycled glass in 1997.

Draw a line to connect the dots figure where 1997 would
lie on the graph and draw a straight line till it intercepts
the dotted line. where the line intercepts draw a horizontal
line to the prices.

Based on the explanation above, what will be a good estimate of the price per pound of recycled glass in 1997?

Show All Work

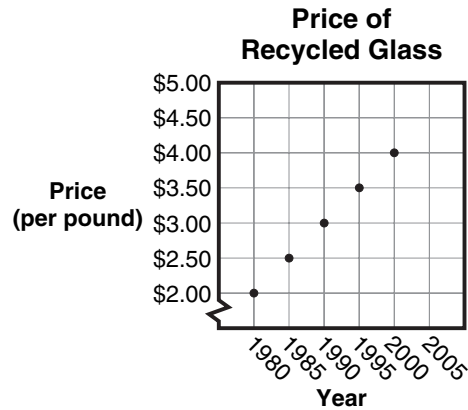**Answer** $ _____3.75_____ per pound

**Test 2—Question 5
Score Point 2**

This response matches the exemplary response contained in the rubric. The student shows a correct explanation and an answer in the range of $3.60 to $3.80 per pound. The response receives a Score Point 2.

This response shows a correct answer in the range of $3.60 to $3.80 per pound. However, the student gives an incorrect explanation. The student does not describe a method to estimate the price per pound of recycled glass in 1997. Therefore, this response receives a Score Point 1.

SCORE POINT 1

5 Look at the graph below.
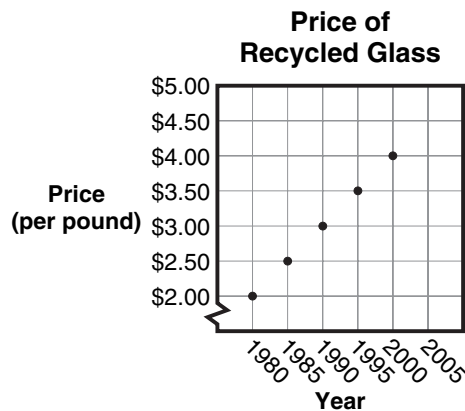
**Price of
Recycled Glass**

On the lines below, explain how to use the graph to estimate the price per pound of recycled glass in 1997.

When you graph you look at your information and determine where you want to graph it.

Based on the explanation above, what will be a good estimate of the price per pound of recycled glass in 1997?

Show All Work

Answer $ ___3.75___ per pound

SCORE POINT 0

5 Look at the graph below.

**Price of
Recycled Glass**

$5.00
$4.50
$4.00
$3.50
Price $3.00
(per pound) $2.50
$2.00

1980 1985 1990 1995 2000 2005
Year

On the lines below, explain how to use the graph to estimate the price per pound of recycled glass in 1997.

  Look at 1995 because that's the closest year on the graph
  to 1997. It is $3.50 a year and each year it goes up 50¢,
  so you need to add $1.00 to it.

Based on the explanation above, what will be a good estimate of the price per pound of recycled glass in 1997?

Show All Work

$3.50
+ 1.00
―――
$4.50
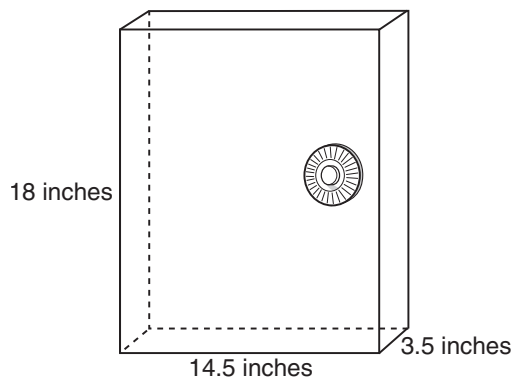
Answer $ _____4.50_____ per pound

**Test 2—Question 5
Score Point 0**

This response shows an incorrect explanation and an incorrect answer. Therefore, this response receives a Score Point 0.

6 Jeannine stores items in a safe. The inside of the safe is in the shape of a rectangular prism. A diagram of the inside of the safe is shown below.

18 inches

14.5 inches

3.5 inches

What is the volume, in cubic inches, of the safe?

Show All Work

Answer _____ cubic inches

Exemplary Response:

• 913.5 cubic inches

Sample Process:

• Volume = *lwh*
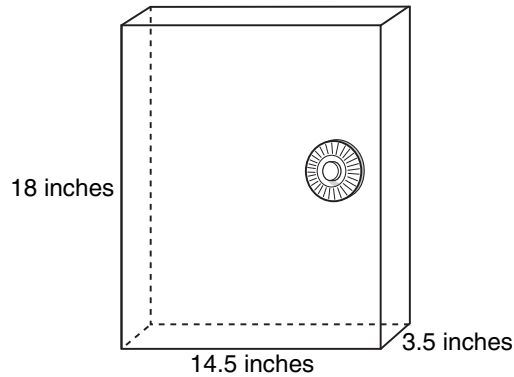
  = (18)(14.5)(3.5)

  = 913.5

OR

• Other valid process

Rubric:

2 points Exemplary response

1 point Correct complete process; error in computation

0 points Other

SCORE POINT 2

6 Jeannine stores items in a safe. The inside of the safe is in the shape of a rectangular prism. A diagram of the inside of the safe is shown below.

18 inches

14.5 inches

3.5 inches

What is the volume, in cubic inches, of the safe?

Show All Work

V = lwh

14.5 (3.5) (18)

50.75 (18)

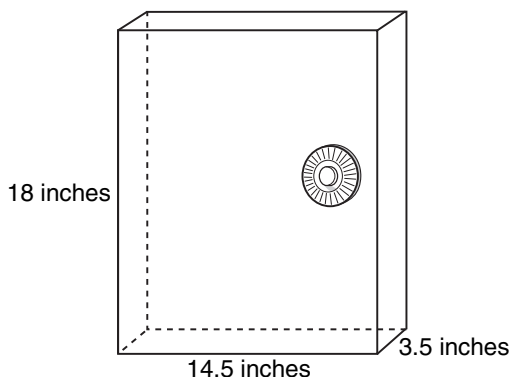913.5 in^3

Answer _____913.5_____ cubic inches

This response shows a correct complete process, but an incorrect answer of 9135 instead of 913.5 is shown. Therefore, this response receives a Score Point 1.

SCORE POINT 1

6 Jeannine stores items in a safe. The inside of the safe is in the shape of a rectangular prism. A diagram of the inside of the safe is shown below.

18 inches

14.5 inches

3.5 inches

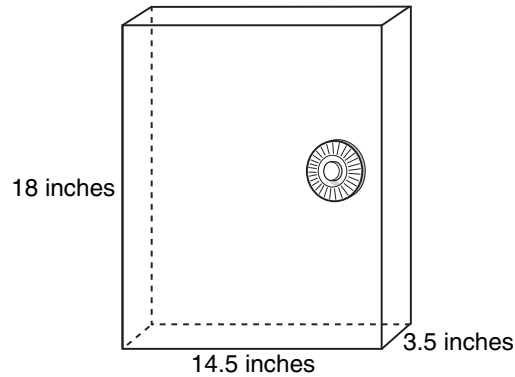What is the volume, in cubic inches, of the safe?

Show All Work

18 × 14.5 × 3.5

Answer ____9135____ cubic inches

SCORE POINT 0

6 Jeannine stores items in a safe. The inside of the safe is in the shape of a rectangular prism. A diagram of the inside of the safe is shown below.

18 inches

14.5 inches

3.5 inches

What is the volume, in cubic inches, of the safe?

Show All Work

rectangular Prism

V = lwh

V = 14.5 (3.5) 18

18 (18) = 324

Answer _____324_____ cubic inches

7 Eva is planning to visit her brother who lives 330 miles away. She wants to determine whether it would be quicker for her to fly or drive. The table below shows the times associated with her trip if she chooses to fly.

Flying

Event	Amount of Time (in hours and minutes)
Drive to airport	1:50
Time at airport	2:00
Flight time	1:05
Baggage pickup	0:45
Drive from airport to brother's	0:40

If Eva drives to her brother's she can travel at a mean speed of 60 miles per hour.

Which type of transportation would take less time, and how much time would she save by choosing that type of transportation?

Show All Work

Type of transportation _____ , **Time saved** _____

Exemplary Response:

- car **and** 0:50

AND

- Correct complete process

Sample Process:

- Flying time:

  1:50 + 2:00 + 1:05 + 0:45 + 0:40 = 6:20

  Driving time:

  $d = rt$

  $t = \dfrac{d}{r}$

  $ = \dfrac{330}{60}$

  $ = 5.5$ hours

  $ = 5$ hours 30 minutes

Time saved:

6:20 − 5:30 = 0:50

OR

- Other valid process

NOTE: Award 1 point for an incorrect conclusion based on a correct process without computational errors.

Rubric:

3 points   Exemplary response

2 points   Correct answer only

          OR

          Correct complete process; error in computation

1 point   Correct process for finding times for both flying and driving with conversion errors

0 points   Other

This response matches the exemplary response contained in the rubric. The student shows "Drive" for the type of transportation, "50 minutes" for the time saved, and a correct complete process. The response receives a Score Point 3.

SCORE POINT 3

7 Eva is planning to visit her brother who lives 330 miles away. She wants to determine whether it would be quicker for her to fly or drive. The table below shows the times associated with her trip if she chooses to fly.

Flying

Event	Amount of Time (in hours and minutes)
Drive to airport	1:50
Time at airport	2:00
Flight time	1:05
Baggage pickup	0:45
Drive from airport to brother's	0:40

If Eva drives to her brother's she can travel at a mean speed of 60 miles per hour.

Which type of transportation would take less time, and how much time would she save by choosing that type of transportation?

Show All Work

$$60 \overline{)330} \quad 5.5 \text{ hrs.}$$

$$D = R \cdot T$$
Drive
5 hrs
30 min

```
1:50        5 80
2:00        6 20
────        ────
3:50        5 30
+1:05       ────
────          50
4:55
 :45
────
5:00
 :40
────
5:40
6:20
```

Type of transportation ___Drive___, **Time saved** ___50 minutes___

SCORE POINT 2

7 Eva is planning to visit her brother who lives 330 miles away. She wants to determine whether it would be quicker for her to fly or drive. The table below shows the times associated with her trip if she chooses to fly.

Flying

Event	Amount of Time (in hours and minutes)
Drive to airport	1:50
Time at airport	2:00
Flight time	1:05
Baggage pickup	0:45
Drive from airport to brother's	0:40

If Eva drives to her brother's she can travel at a mean speed of 60 miles per hour.

Which type of transportation would take less time, and how much time would she save by choosing that type of transportation?

Show All Work

flying
 1:50
+2:00
 3:50
+1:05
 4:55
+0:45
 5:30
+0:40
 6:10

driving
d = rt
330 = 60t
$\frac{11}{2}$ = t
$5\frac{1}{2}$ = t → $5\frac{1}{2}$ hours

Type of transportation _Car/Driving_, **Time saved** _40 minutes_

This response shows a correct process, but a conversion error results in an incorrect answer of 1 hour and 30 minutes for time saved. Therefore, this response receives a Score Point 1.

SCORE POINT 1

7 Eva is planning to visit her brother who lives 330 miles away. She wants to determine whether it would be quicker for her to fly or drive. The table below shows the times associated with her trip if she chooses to fly.

Flying

Event	Amount of Time (in hours and minutes)
Drive to airport	1:50
Time at airport	2:00
Flight time	1:05
Baggage pickup	0:45
Drive from airport to brother's	0:40

If Eva drives to her brother's she can travel at a mean speed of 60 miles per hour.

Which type of transportation would take less time, and how much time would she save by choosing that type of transportation?

Show All Work

$$d = rt$$

1:50 + 2:00 + 1:05 + :45 + :40

$$\frac{330}{60} = \frac{60r}{60}$$

3:50

4:55

5:40

6:20

5:50

Type of transportation ___driving___ , **Time saved** $\dfrac{\text{1 hour and}}{\text{30 minutes}}$

SCORE POINT 0

7 Eva is planning to visit her brother who lives 330 miles away. She wants to determine whether it would be quicker for her to fly or drive. The table below shows the times associated with her trip if she chooses to fly.

Flying

Event	Amount of Time (in hours and minutes)
Drive to airport	1:50
Time at airport	2:00
Flight time	1:05
Baggage pickup	0:45
Drive from airport to brother's	0:40

If Eva drives to her brother's she can travel at a mean speed of 60 miles per hour.

Which type of transportation would take less time, and how much time would she save by choosing that type of transportation?

Show All Work

4:00 + :50 + :50 + :40
5:40 + :40
6:20

Type of transportation ____flight____, **Time saved** ____4hrs____

8 Simone is renting a moving van. The cost of renting a moving van is $32.50 per day plus $0.35 for each mile that the moving van is driven. Simone figures that the cost of using a moving van for one day will be $42.30. How many miles does she plan on driving the moving van?

Show All Work

Answer _____ miles

Exemplary Response:

• 28 miles

Sample Process:

• $42.30 = $32.50d + $0.35m$

$42.30 - 32.50 = 0.35m$

$9.80 = 0.35m$

$m = 28$

OR

• Other valid process

Rubric:

2 points Exemplary response

1 point Correct complete process; error in computation

0 points Other

SCORE POINT 2

8 Simone is renting a moving van. The cost of renting a moving van is $32.50 per day plus $0.35 for each mile that the moving van is driven. Simone figures that the cost of using a moving van for one day will be $42.30. How many miles does she plan on driving the moving van?

Show All Work

$$42.30 = 32.50 + .35x$$

$$-32.50 \quad -32.50$$

$$\frac{9.8}{.35} = \frac{.35x}{.35}$$

$$28 = x$$

Answer _____28_____ miles

SCORE POINT 1

8 Simone is renting a moving van. The cost of renting a moving van is $32.50 per day plus $0.35 for each mile that the moving van is driven. Simone figures that the cost of using a moving van for one day will be $42.30. How many miles does she plan on driving the moving van?

Show All Work

$32.50 per day
$0.35 per each mile

$$
\begin{array}{r}
\overset{3\ 1}{4\!\!\!/2.30} \\
-32.50 \\
\hline
9.70
\end{array}
$$

$$
\begin{array}{r}
27.71 \\
35\overline{)970} \\
70 \\
\hline
270 \\
245 \\
\hline
250 \\
245 \\
\hline
50
\end{array}
$$

Answer _____27.71_____ miles

This response shows an incorrect answer and an incomplete process. The student does not divide 9.8 by 0.35 to find the number of miles. Therefore, this response receives a Score Point 0.

SCORE POINT 0

8 Simone is renting a moving van. The cost of renting a moving van is $32.50 per day plus $0.35 for each mile that the moving van is driven. Simone figures that the cost of using a moving van for one day will be $42.30. How many miles does she plan on driving the moving van?

Show All Work

$$
\begin{array}{r}
42.30 \\
-32.50 \\
\hline
9.8
\end{array}
$$

Answer _____9.8_____ miles

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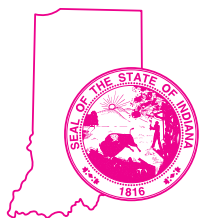
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